



National Certificate of Educational Achievement  
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

## **Exemplar for Internal Assessment Resource**

### **Science Level 1**

#### **Resource title: Lots of Metals**

This exemplar supports assessment against:

**Achievement Standard 90946**

**Investigate the Implications of the Properties of Metals to Their Use in Society**

#### **Enhanced schedule**

The moderators have provided supporting information to enhance the assessment schedule so there is clear guidance and more supporting detail for teachers on which to base assessment decisions.

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To support internal assessment from 2011

### CATEGORY 3

#### Expanded Assessment schedule: Science 1.7A

Evidence	Judgments for achievement	Judgments for achievement with merit	Judgments for achievement with excellence
<p>Evidence will involve at least four different metals.</p> <p>Evidence will be required to show students have carried out the relevant practical work.</p> <p>Eg</p> <p>For each metal</p> <ul style="list-style-type: none"><li>• a description of physical properties such as appearance, electrical conductivity, density, etc.</li><li>• a description of chemical properties, that is observations when heated in air (oxygen), added to water and / or acid</li><li>• word equations to show what occurs with chemical properties</li><li>• implications of use in society</li></ul> <p>Eg magnesium</p> <ul style="list-style-type: none"><li>• Magnesium is a silvery coloured metal that has</li></ul>	<p>Primary data regarding the physical and chemical properties of the selected metals has been gathered and recorded in the table provided in the resource sheet.</p> <p>The physical and chemical properties of these metals are described.</p> <p>Word equations are provided.</p> <p>An account is given of the specific uses of the studied metals in society.</p>	<p>As for Achieved plus:-</p>	<p>As for Achieved plus:-</p>

<p>low density and conducts electricity.</p> <ul style="list-style-type: none"> <li>It burns with a bright white light and reacts very slowly with water and reacts vigorously with dilute acid to form bubbles.</li> <li>magnesium + hydrochloric acid → magnesium chloride + hydrogen gas</li> <li>Magnesium is commonly used in flares.</li> </ul>			
<p>Eg</p> <p>For each metal</p> <ul style="list-style-type: none"> <li>Use in society is linked to chemical properties of metal</li> <li>Symbol equations (may not be balanced) for chemical reactions</li> </ul> <p>Eg magnesium</p> <ul style="list-style-type: none"> <li>Magnesium is commonly used in flares because when it burns in oxygen a very bright white light is produced.</li> <li><math>2 \text{Mg} + \text{O}_2 \rightarrow 2 \text{MgO}</math></li> </ul> <p>(equation may not be balanced but formulae of reactants and products must be correct)</p>		<p>Links are made between the properties of metals and their specific uses in society including their reactivity with oxygen, water and/or acid.</p> <p>The uses are explained using chemistry vocabulary, symbols and conventions including names and formulae are used</p> <p>Symbol equations are provided for relevant reactions.</p>	<p>As for Merit plus:-</p>
<p>Eg</p> <p>For each metal</p>			<p>The links between the chemical and physical properties of metals and the</p>

<ul style="list-style-type: none"> <li>• Use in society is linked to chemical and physical properties of metal</li> <li>• The four metals are compared and contrasted with respect to their physical and chemical properties</li> <li>• Symbol equations for chemical reactions</li> </ul> <p>Eg magnesium</p> <ul style="list-style-type: none"> <li>• The bright light that is formed when magnesium reacts with oxygen (air) does not occur when the other metals are heated. That is why magnesium is useful for flares.</li> <li>• When copper is heated, little change occurs. When lead is heated it melts. Calcium is very reactive with oxygen and so it is difficult to get calcium to use as it is already reacted.</li> <li>• When magnesium reacts with oxygen it forms magnesium oxide which is a white powder.</li> </ul> $2 \text{Mg} + \text{O}_2 \rightarrow 2 \text{MgO}$			<p>implications of their use in society are justified.</p> <p>The different properties and uses of the metals are compared and contrasted.</p> <p>Balanced symbol equations have been provided.</p>
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Final grades will be decided using professional judgment based on a holistic examination of the evidence provided against the criteria in the Achievement Standard.